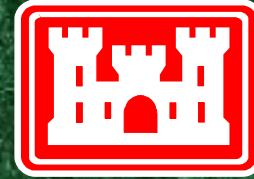


4/8/2003



“Death by PowerPoint”

# Northwestern Division



NORTHWESTERN DIVISION

# SUSTAINABLE DESIGN

*Steve Rumbaugh's quicky into to SPiRiT for NWD  
Engineering employees in August 2001*

# SPiRiT

(SUSTAINABLE PROJECT RATING TOOL)

## What does it rate?



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# SUSTAINABLE DESIGN

**SPiRiT**

(SUSTAINABLE PROJECT RATING TOOL)

- Rates how “green” a project is during its construction, for the projected life of the building, and beyond.





NORTHWESTERN DIVISION

# SUSTAINABLE DESIGN

## SPRT Sustainable Project Certification Levels

100 points possible

Bronze	25-34
Silver	35-49
Gold	50-74
Platinum	75-100





# NORTHWESTERN DIVISION SUSTAINABLE DESIGN

DIVISION	POINTS
1.0 Sustainable Sites . . . . .	20
2.0 Water Efficiency . . . . .	5
3.0 Energy & Atmosphere . . . . .	28
4.0 Materials & Resources . . . . .	13
5.0 Indoor Environmental Quality (IEQ) .	17
6.0 Facility Delivery Process . . . . .	7
7.0 Current Mission . . . . .	6
8.0 Future Missions . . . . .	4





# NORTHWESTERN DIVISION SUSTAINABLE DESIGN

- 1.0 Sustainable Sites .. **Emphasizes dense, urban development & mass transit - avoiding automobile traffic.....** .20 pts
- 2.0 Water Efficiency ..... **reuse of water** ..... 5 pts
- 3.0 Energy & Atmosphere ..... **low energy usage with non-traditional fuels** ..... .28 pts
- 4.0 Materials & Resources ... **Reducing landfill usage and using recycled materials** ..... .13 pts
- 5.0 Indoor Environmental Quality (IEQ) ..... **Pure indoor air with natural light and ventilation and maximum individual control of HVAC** ....17 pts
- 6.0 Facility Delivery Process ... **Building team of Believers** .. 7 pts
- 7.0 Current Mission .. **Preventative Maintenance & Good Design** .. 6 pts
- 8.0 Future Missions ... **Design for expected life & later adaptation, flexible design** ..... 4 pts





# NORTHWESTERN DIVISION SUSTAINABLE DESIGN

## 1.0 Sustainable Sites . . . . .20 points

- 1.C1 Site Selection, 2 pts, Installation
- Avoid training, low, or wetlands; stay near road
- 1.C2 Installation Redevelopment, 2 pts, Installation
- Density of 60,000 sf/acre - against Force Protection **JUST NUTS**
- 1.C3 Brownfield Redevelopment, (HTRW) 2 pts, Installation, \$\$
- Develop a contaminated site, expense must be programmed.
- 1.C4 Alternative Transportation 4 pts, Installation
- ½ mile to mass transit, bikes, 2 mi Alt fuel, min. parking
- 1.C5 Reduced Site Disturbance 2 pts, Corps
- Reduce footprint 25% less than zoning allows? **What zoning??**
- 1.C6 Stormwater Management 2 pts, Installation
- Don't add to runoff, treat to eliminate 80% of solids & 40% phosphorous



# NORTHWESTERN DIVISION SUSTAINABLE DESIGN

## 1.0 Sustainable Sites (con'd). . . . .20 points

1.C7 Lndscp & Ext Design to Reduce Heat Isld 2 pts, Corps,\$\$

- Are Heat Islands a problem on Mil Inst?

1.C.8 Light Pollution Reduction 1 pt

- Don't let light escape site. Goes against Force Prot

1.C9 Optimize Site Features 1 pt, Corps

- Orient to sunlight, minimize grading

1.C10 Facility Impact 1 pt, Corps

- Near mass transit, stop noise, keep views

1.C11 Site Ecology 1 pt, Corps

- Clean up problems, noise & eyesores. Landscape to help nature







# NORTHWESTERN DIVISION SUSTAINABLE DESIGN

## **2.0 Water Efficiency . . . . .5 points**

2.C1 Water Efficient Landscaping **2 pts, Installation**

- Plants that don't need irrigation, or Use recycled or waste water

2.C2 Innovative Wastewater Technologies **1 pts, Installation, \$\$**

- Reduce water for sewage movement 50% / treat onsite to Tertiary std.

2.C3 Water Use Reduction **2 pts, Corps, \$\$**

- Reduce water usage 20% below low-flow fixtures (repeats?)





# NORTHWESTERN DIVISION SUSTAINABLE DESIGN

## 3.0 Energy and Atmosphere . . . . .28 points

- |   |                        |
|---|------------------------|
| 3.C1 Optimize Energy Performance                              | 20 pts, COE& Inst\$\$  |
| • Beat energy budget by up to 50%, get points                 |                        |
| 3.C2 Renewable Energy,  | 3 pts, Corps, \$\$     |
| • Up to 20% of energy from wind, geo, photo, biomass, etc     |                        |
| 3.C3 Additional Commissioning                                 | 1 pt, design&contr\$\$ |
| • Additional review,  |                        |
| 3.C4 Elimination of HCFC's & Halons                           | 1 pt, automatic?       |
| • Aren't we already doing this?                               |                        |
| 3.C5 Measurement and Verification                             | 2 pts, Corps           |
| • Continuing measurement of energy usage and equip efficiency |                        |
| 3.C6 Green Power  | 1 pt. Inst             |
|   |                        |
| 3.C7 Distributed Generation                                   | 1 pt                   |





# NORTHWESTERN DIVISION SUSTAINABLE DESIGN

## 4.0 Materials and Resources. . . . .13 points

- 4.C1 Building Reuse 3 pts, COE& Inst
- Finding an existing building to fit a purpose, not new
- 4.C2 Construction Waste Management 2 pts, Corps,
- Avoid dumping material in landfill, but find ways to recycle
- 4.C3 Resource Reuse 2 pts, Difficult
- Use salvaged materials
- 4.C4 Recycled Content 2 pts, steel
- Use recycled products, easy in steel, carpet, find others
- 4.C5 Local/Regional Materials 2 pts, FAR restricts?
- Buy materials within 500 miles, then developed & manuf same
- 4.C6 Rapidly Renewable Materials 1 pt,
- Board and products made from agricultural fibers, “straw board”
- 4.C7 Certified Wood 1 pt
- Wood products grown friendly and certified as such



# NORTHWESTERN DIVISION SUSTAINABLE DESIGN

## 5.0 Indoor Environmental Quality (IEQ) . .17 pts

### 5.C1 IAQ Monitoring

1 pt, COE

- Ventilate & monitor CO2 to approximate outdoor level

### 5.C2 Increase Ventilation Effectiveness

1 pt, Corps, \$?

- Ventilation effectiveness (E) of 0.9 by ASHRAE

### 5.C3 Constr IAQ Mgmt Plan

2 pts,

- Protect from moisture during construction, flush bldg 2 weeks

### 5.C4 Low-Emitting Materials

4 pts, use these now?

- Meet or exceed low emitting VOC standards

### 5.C5 Indoor Chemical & Pollutant Source Control

1 pt, \$?

- Provide better air and physical separations to isolate cleaning, environmental or other chemical sources. (Some paranoia here?)



# NORTHWESTERN DIVISION SUSTAINABLE DESIGN

## 5.0 Indoor Environmental Quality (IEQ) . .17 pts

5.C6 Controllability of Systems 2 pts

- Individual controls of windows, lights, HVAC

5.C7 Thermal Comfort 2 pts

- Control temp & humidity for individuals, monitor everything

5.C8 Daylight & Views 2 pts, Corps

- Provide daylight to almost everyone working and views to most, narrower buildings where everyone has a corner office.

5.C9 Acoustic Environment/Noise Control 1 pt

- More insulation and materials & better equipment to reduce noise

5.C10 Facility In-Use IAQ Mgmt Plan 1 pt

- Clean on schedule, train in pollution prevention, monitor air



# NORTHWESTERN DIVISION SUSTAINABLE DESIGN

## 6.0 Facility Delivery Process. . . . .7 points

### 6.C1 Holistic Delivery of Facility

7 pts, COE& Inst\$\$

- Team leaders who believe
- Train others to believe
- Have goals and measure them
- Have charrettes to involve everyone
- Resolve tradeoffs among sustainability, first cost, life-cycle cost, & mission requirements
- DOCUMENT! DOCUMENT! DOCUMENT!





# NORTHWESTERN DIVISION SUSTAINABLE DESIGN

## 7.0 Current Mission . . . . .6 points

7.C1 Operations & Maintenance                      3 pts, COE, Inst, & USER \$\$

- Commission equipment, O&M, train occupants, cleaning & recycling

7.C2 Design for Soldier & Workforce

Productivity & Retention    3 pts, Corps, \$\$

- Have facilities so good that it makes the people better than they are





# NORTHWESTERN DIVISION SUSTAINABLE DESIGN

## 8.0 Future Mission . . . . .4 points

8.C1 Assess the Lifespans of the Designed Use  
and Supporting Systems

2 pts, COE& Inst\$\$

- Figure out how long everything is needed and the equipment will last and plan around that

8.C2 Design for Adaptation, Renewal &  
Future Uses

2 pts, Corps, \$\$

- Anticipate the next use and make the facility flexible to adapt.
- Make everything as small and efficient as possible





tiresome stuff



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# NORTHWESTERN DIVISION SUSTAINABLE DESIGN

## ENVIRONMENTALISM

- SPiRiT is partly practical, partly religion.
- Parts 6, 7 & 8 emphasize making believers.
- This is a way to grope into the future when you are pretty certain that what we're doing is wrong.
- 50 years ago we couldn't imagine that air conditioning and automatic doors would be routine. Most of this will become routine in some form in the future.
- That form will likely be very different from what either environmentalist or businessmen expect.





## NORTHWESTERN DIVISION SUSTAINABLE DESIGN

\$\$

- About half of the points will have added cost.
- Items such as Brownfield redevelopment, significant water reduction, dramatic improvement above the energy budget, and additional commissioning will need to be programmed.
- We try to keep buildings flexible now, and pay extra for doing it.





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# Questions?



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